

Overview of Hanford Plutonium Production and Waste/Nuclear Material Legacy



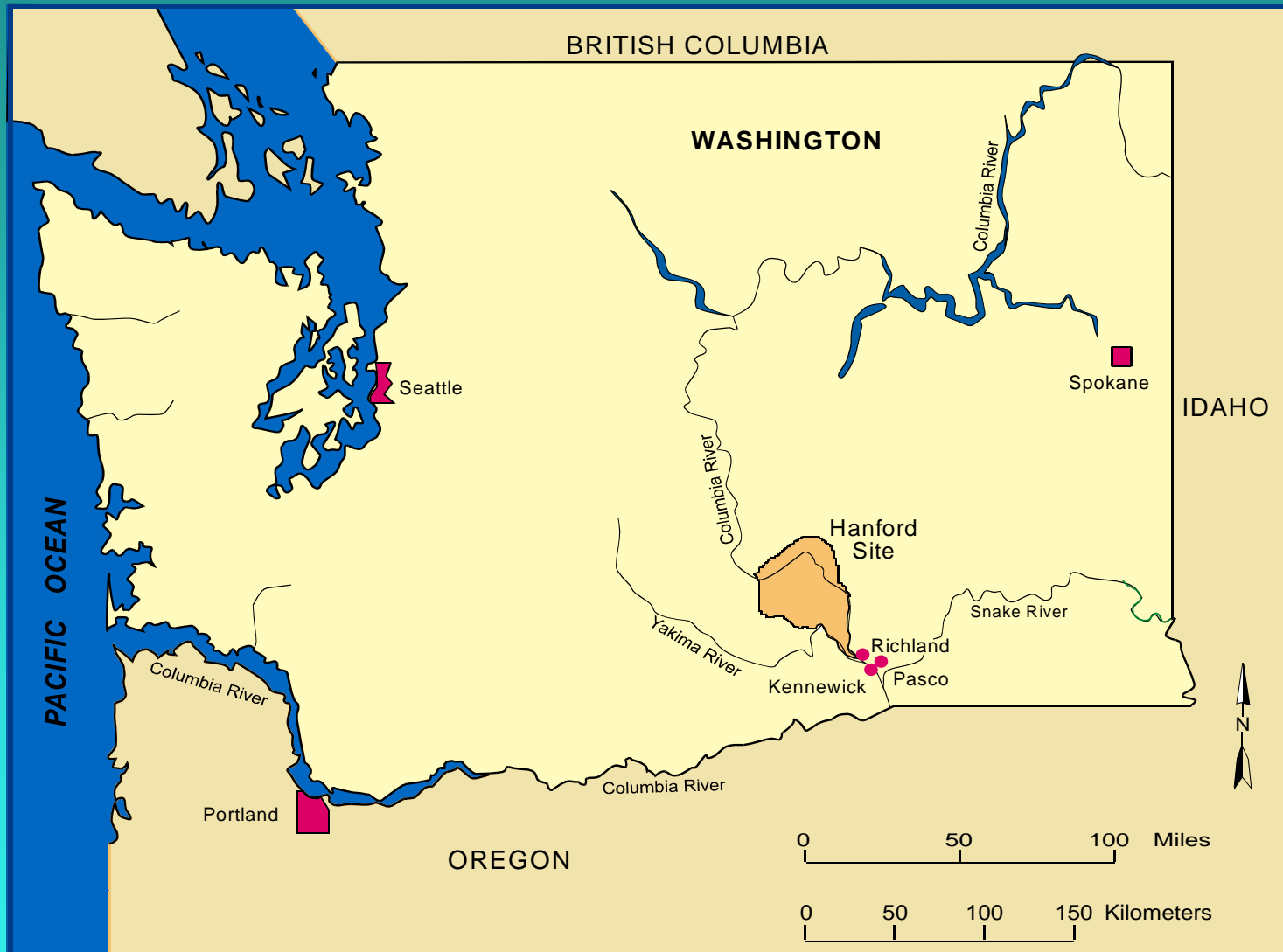
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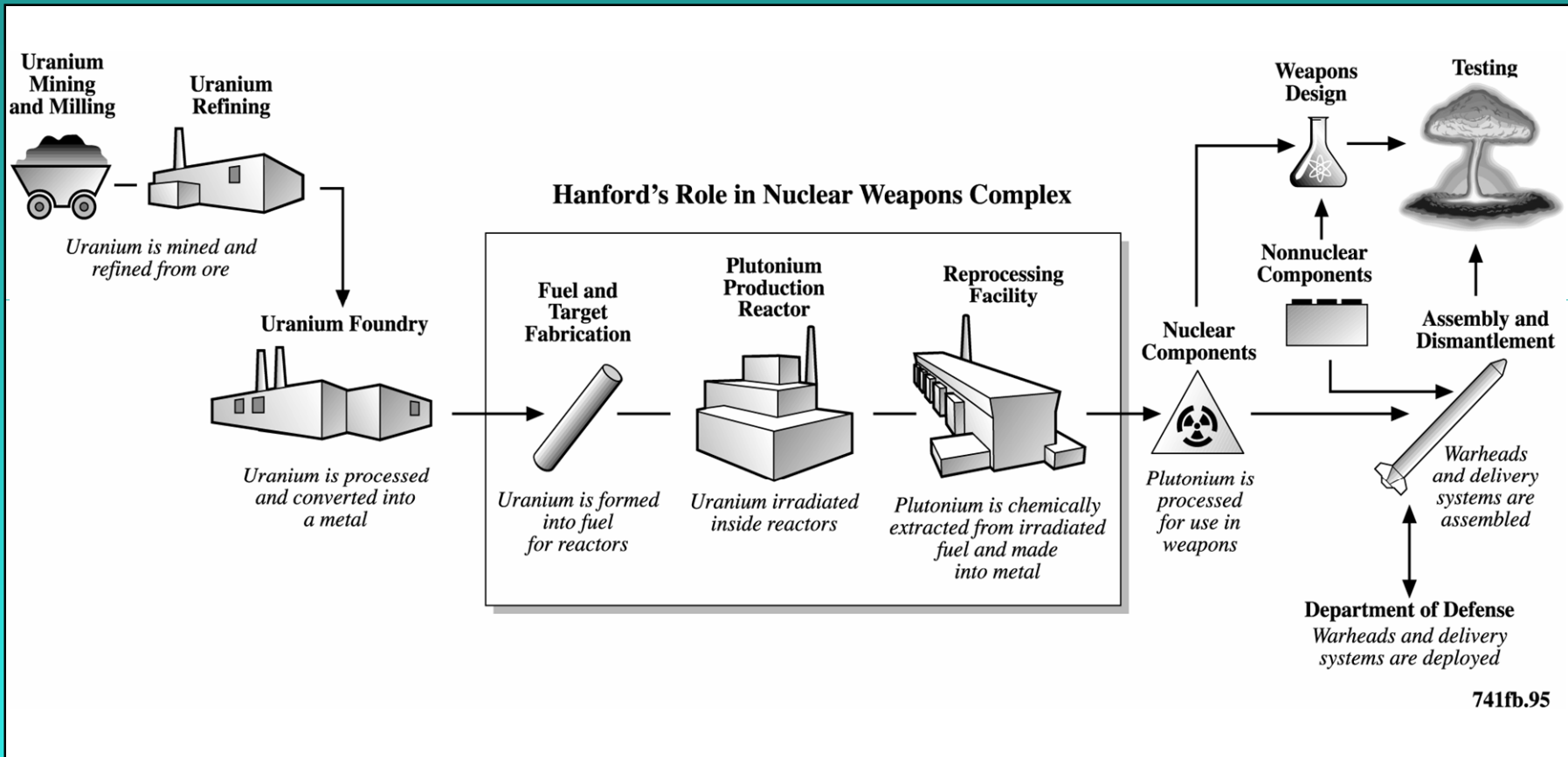
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U.S. Department of Energy
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Location of Hanford Site



Past Mission of Hanford



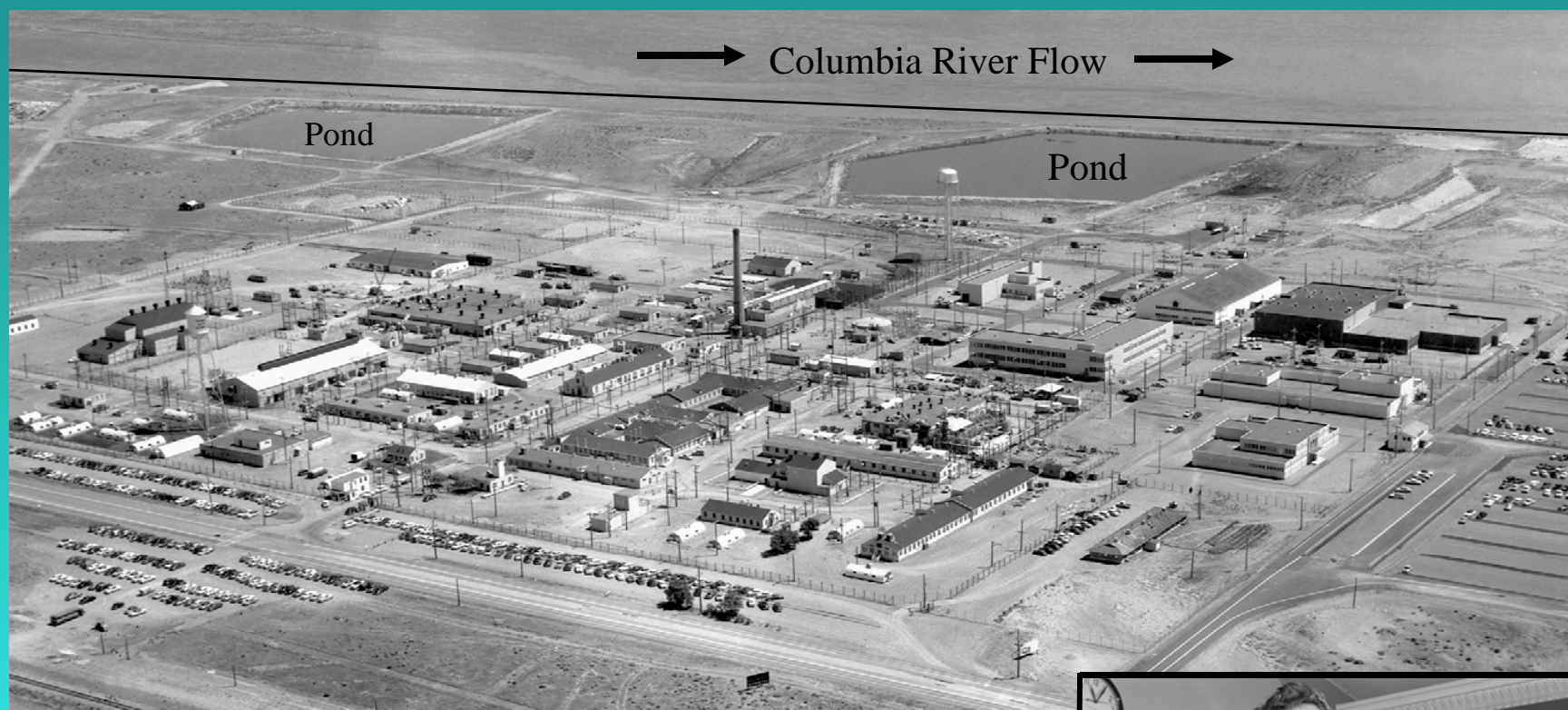
Overview of Onsite Facilities



1. 300 Area Liquid Effluent Treatment Facility
2. Commercial Operating Nuclear Power Plant
3. Fast Flux Test Facility
4. Observatory
5. Laser Interferometer Gravitational Wave Observatory (LIGO)
6. Old Hanford Townsite
7. Plutonium-Uranium Extraction (PUREX) Plant
8. B Plant
9. Prototype Surface Engineered Barrier
10. 200 Area Liquid Effluent Treatment Facility
11. Submarine Burial
12. U.S. Ecology Commercial Solid Waste Site
13. Environmental Restoration Disposal Facility (ERDF)

14. Waste Encapsulation and Storage Facility (WESF)
15. Canister Storage Facility
16. Reduction-Oxidation (REDOX) Plant
17. U Plant
18. T Plant
19. Plutonium Finishing Plant
20. Waste Receiving and Processing (WRAP) Facility
21. F Reactor
22. H Reactor
23. D and DR Reactors
24. N Reactor
25. KE and KW Reactors; Cold Vacuum Drying Facility
26. B and C Reactors

300 Area in South Hanford (1953 Photo)



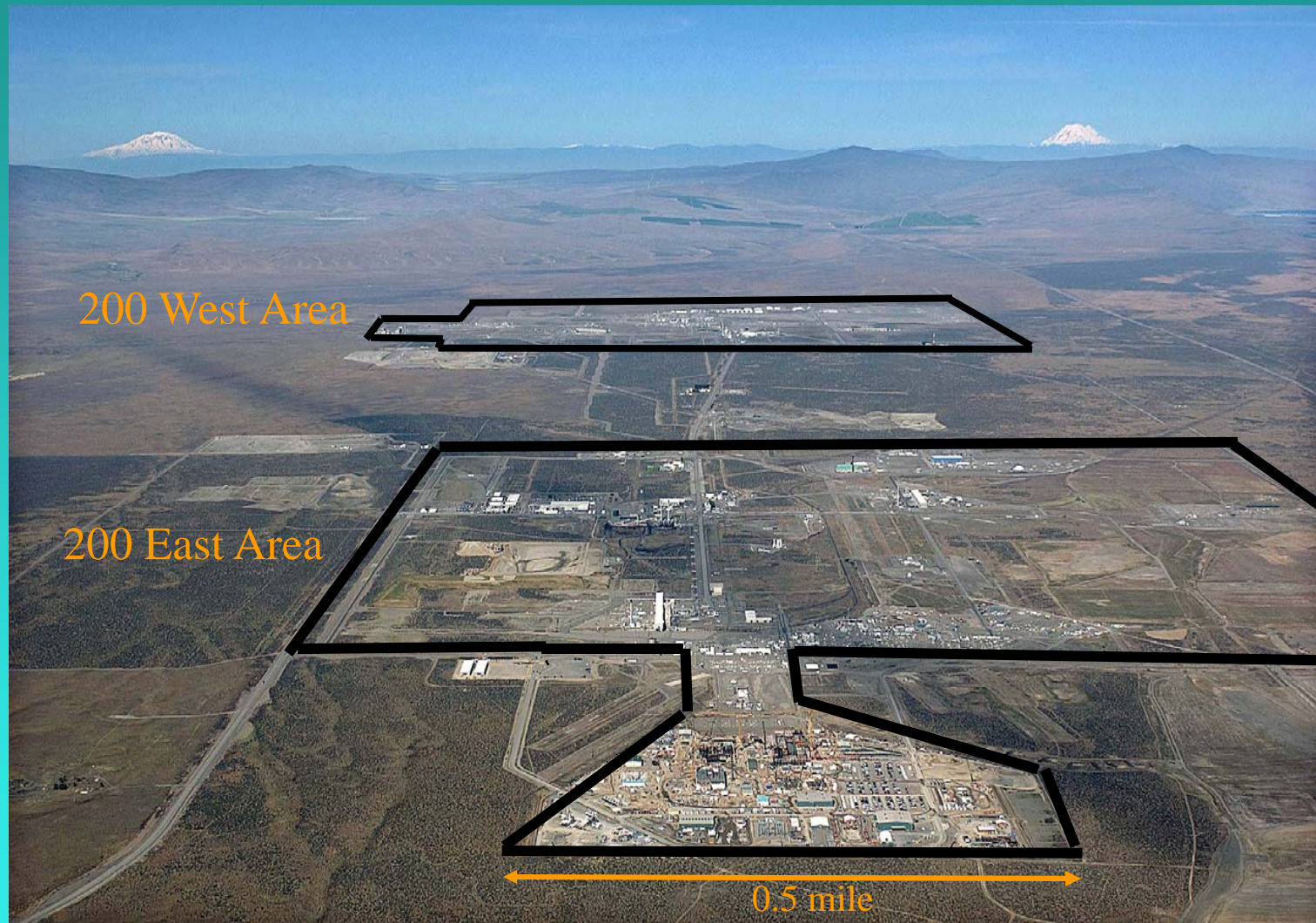
Uranium fuel preparation and research took place in 300 Area. Notice two waste water seepage ponds along riverbank. Twenty (20) million fuel slugs manufactured: 80% the size shown in picture.



Reactors Located in 100 Area: Two Reactor Sites Shown

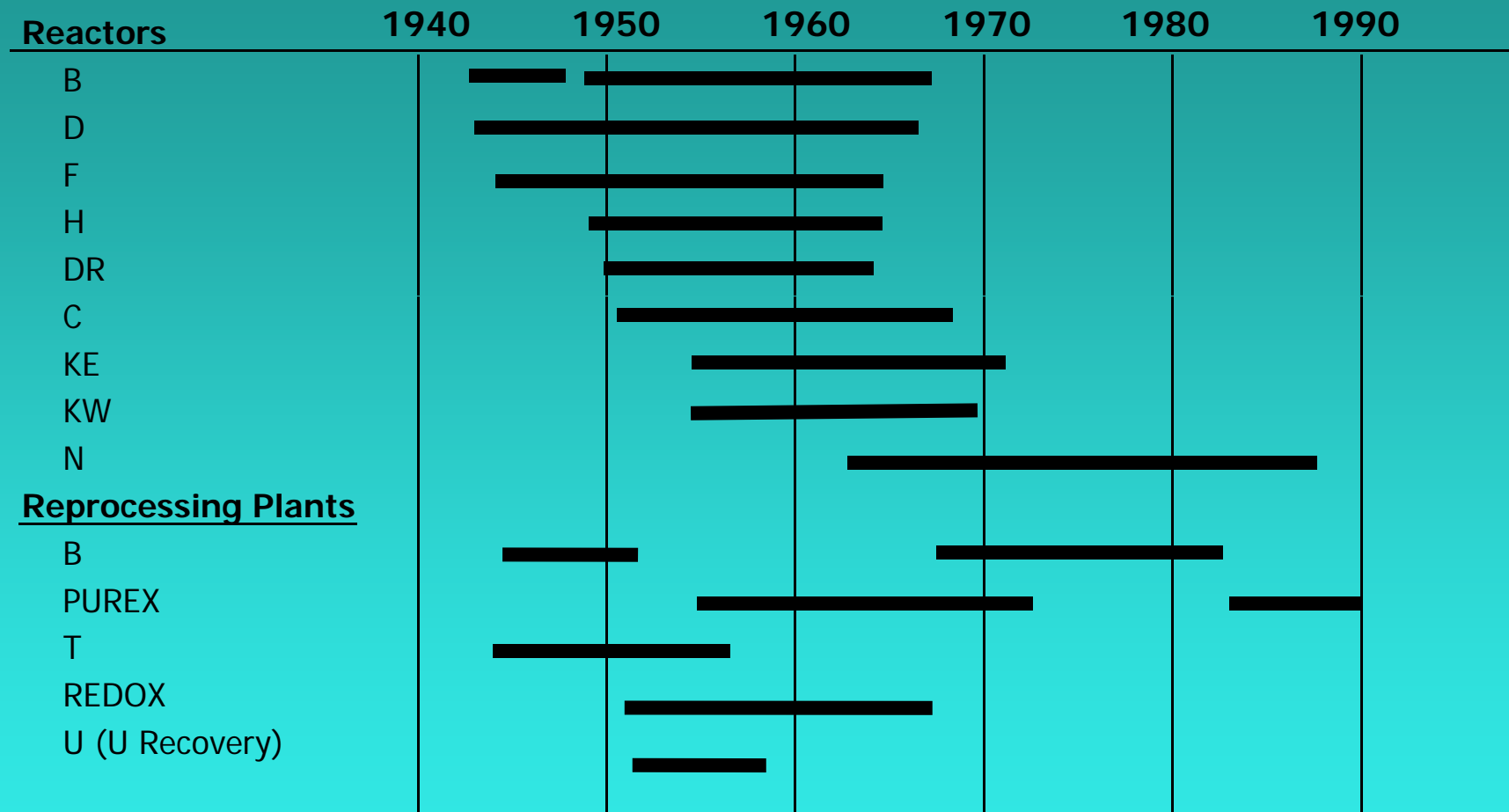


Aerial View of Central Plateau Where Fuel Reprocessing Took Place

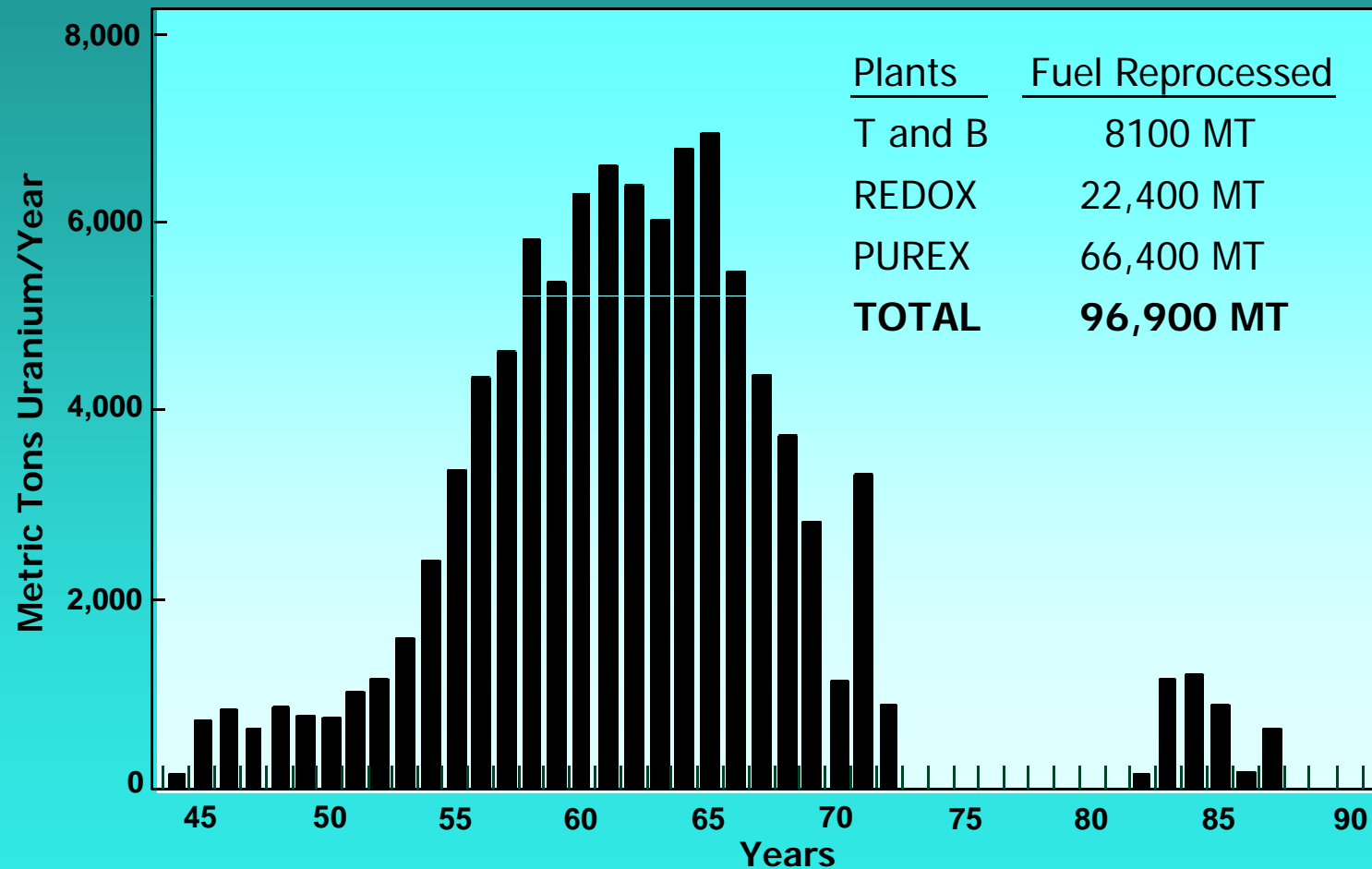


North →

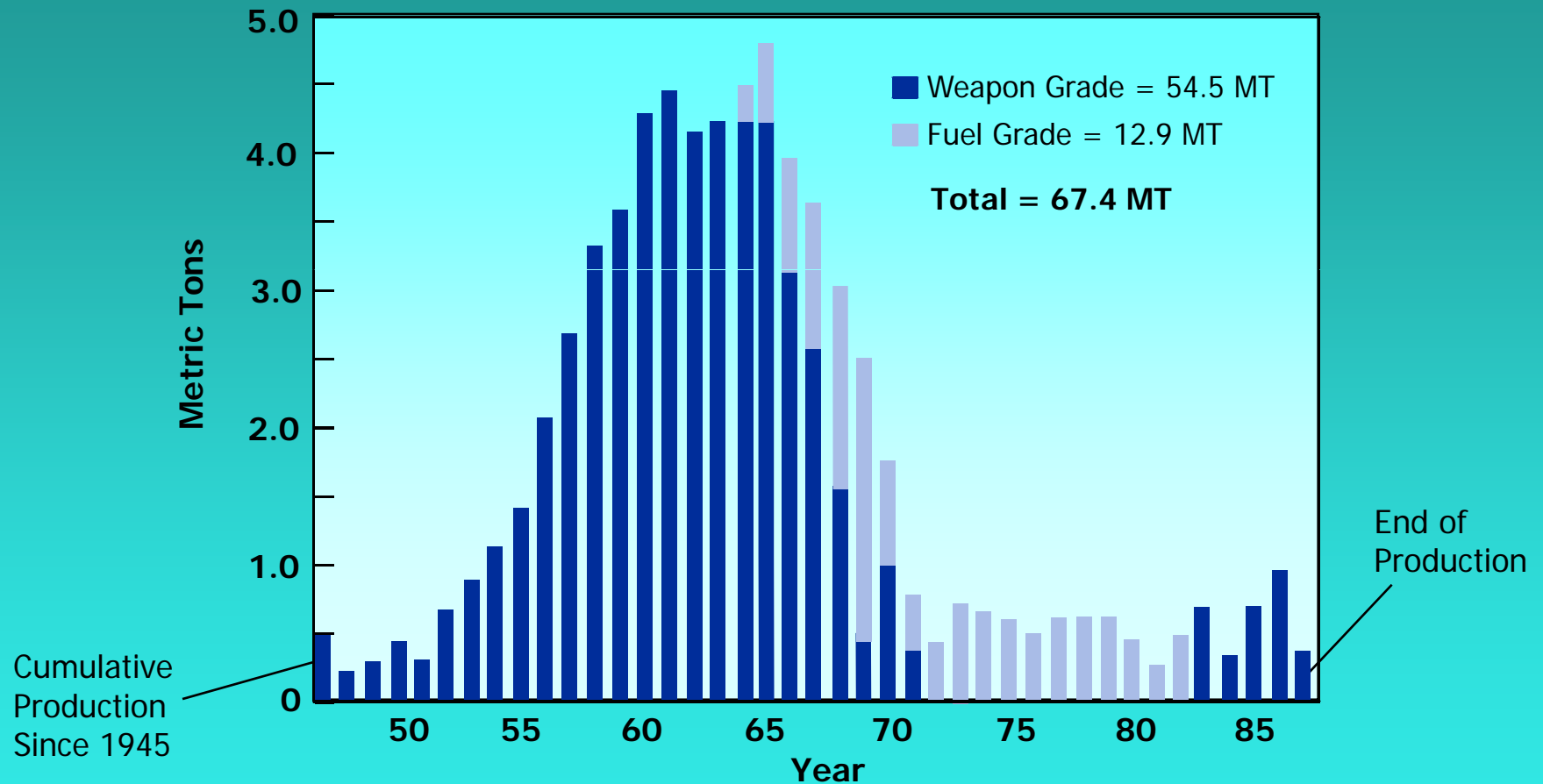
Operation History of Hanford Facilities



Uranium Fuel Reprocessed at Hanford



Hanford Plutonium Production



Waste Management at Hanford

Waste or Material Disposition

Activity

Nuclear Fuel Fabrication

Reactor Operations

Nuclear Fuel Reprocessing



Highly Radioactive Waste → Tanks

Less Radioactive Liquids → Underground

Solid Waste → Buried

Nuclear Material → Stored or shipped offsite

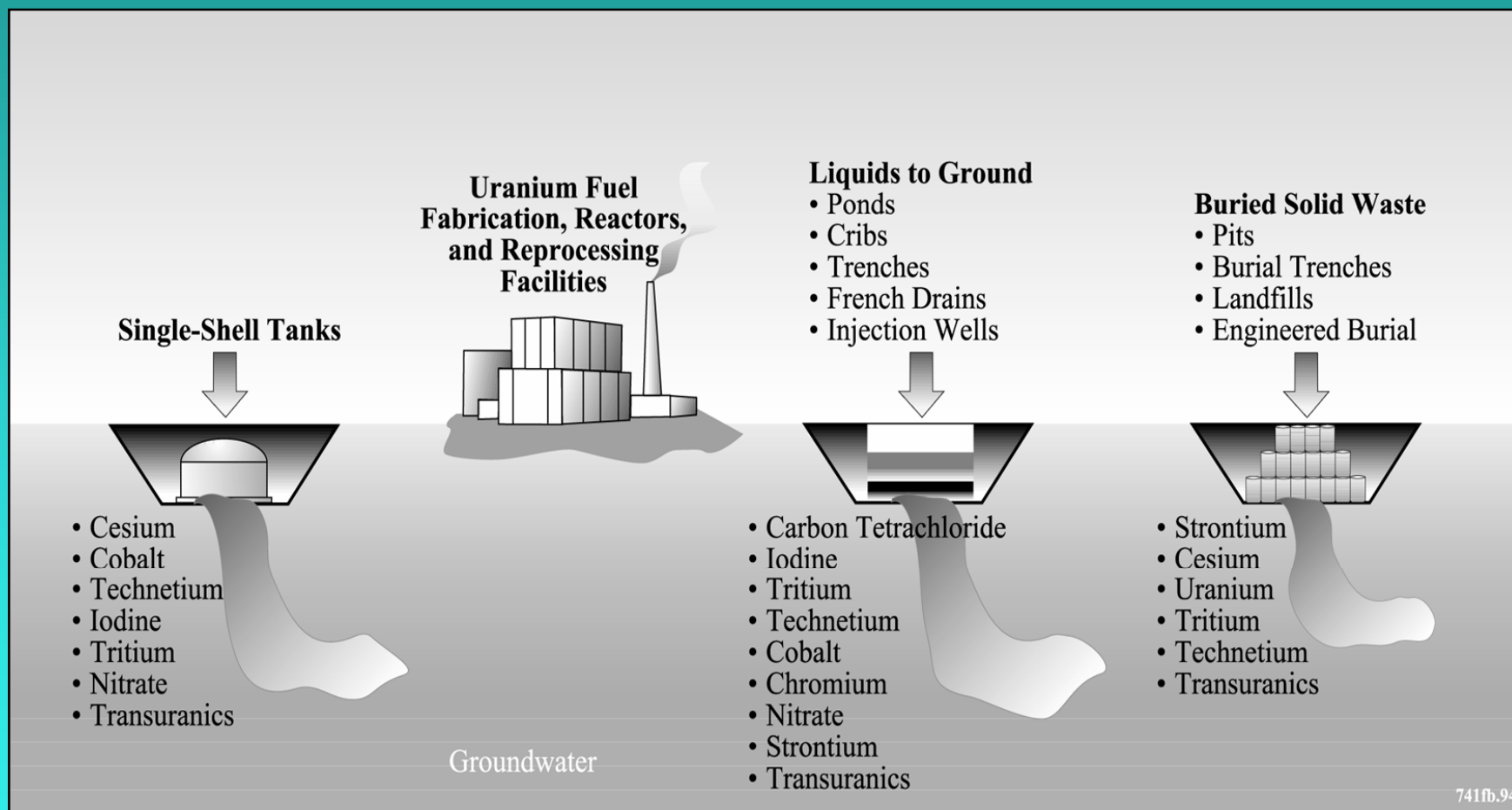
Gases → Atmosphere

Reactor Cooling Water → River

Onsite Waste and Nuclear Materials

		Volume	Curies	Chemicals
	Tank Waste	200,000 m ³	195 million	150,000 MT
	Solid Waste	700,000 m ³	6 million	65,000 MT
	Soil and Groundwater	1 billion m ³	2 million	100,000 to 300,000 MT
	Facilities	5.5 million m ³	1 million	----
	Nuclear Material	700 m ³	185 million	----

Examples of Contaminants in Hanford Soil and Groundwater



Key Radionuclides Released to Atmosphere



32M curies released

- 12M curies from reactors (99% Ar^{41})
- 20M curies from reprocessing plants (90% Kr^{85})

Key Radionuclides Contributing to Radiation Dose (curies)

Year	I-131	Ru-103/-106	Ce-144	Sr-90	Pu-239
1944-1949	697,000	290	1740	30	2
1950-1959	43,000	1130	630	10	<1
1960-1969	460	130	1350	25	<1
1970-1972	<1	1	50	2	<1

99% of dose from I-131

1% of dose from these radionuclides

Key Radionuclides Released to Columbia River

